

Sub 127

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8. A nucleic acid sequence encoding a fluorescent protein according to claim 1.
9. A recombinant DNA construct comprising a regulatory element operatively linked to a nucleic acid sequence according to claim 8.
10. A cell transformed or transfected with a recombinant DNA construct according to claim 9.
11. A method of determining protease activity in a sample cell transformed or transfected according to claim 10, comprising the steps of:
- i) determining at least one of the emission and excitation spectra of said sample cell;
 - ii) determining for a cell transformed or transfected according to claim 9 and having a known protease activity the emission and/or excitation spectra determined in step (i);
 - iii) comparing the result of detection steps (i) and (ii); and
 - iv) correlating the results of comparison step (iii) to determine the level of said protease activity in said sample cell.
12. A method of detecting protease activity in a sample cell according to claim 11, the cell having a known protease activity having no protease activity.
13. A method of detecting a change in protease activity in a sample cell transformed or transfected according to claim 10, comprising the steps of:
- i) at a first timepoint, determining at least one of the emission and excitation spectra of said sample cell;

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- ii) at a second timepoint, re-determining the emission and/or excitation spectra of said sample cell determined in step (i);
- iii) comparing the results of steps (i) and (ii); and
- iv) correlating the results of comparison step (iii) to determine any change in said protease activity in said sample cell.

14. A method of determining the effect of a compound on the activity of a protease in a cell transformed or transfected according to claim 10, comprising the steps of:

- i) determining at least one of the emission and excitation spectra of said cell;
- ii) treating said cell with said compound and re-determining the emission and/or excitation spectra of said cell determined in step (i);
- iii) comparing the results of steps (i) and (ii); and
- iv) correlating the results of comparison step (iii) to determine the effect of said test agent upon said activity of said protease.

15. A method of determining the effect of a compound on the activity of a protease in first and second cells transformed or transfected according to claim 10, comprising the steps of:

- i) determining at least one of the emission and excitation spectra of said first cell;
- ii) treating said second cell with said compound and determining the emission and/or excitation spectra of said second cell determined in step (i) for said first cell;
- iii) comparing the results of steps (i) and (ii); and
- iv) correlating the results of comparison step (ii) to determine the effect of said compound upon said activity of said protease.

16. A method of determining protease activity in a sample, comprising the steps of:

- i) adding to said sample a fluorescent protein according to claim 1 and the conditions necessary to allow fluorescence, and determining at least one of the emission and excitation spectra of said sample;
- ii) adding to a control sample a fluorescent protein according to claim 1 and the conditions necessary to allow fluorescence, and determining the emission and/or excitation spectra determined in step (i), the control sample having a known protease activity;
- iii) comparing the result of detection steps (i) and (ii); and
- iv) correlating the results of comparison step (iii) to determine the level of said protease activity in said sample.

17. A method of detecting protease activity in a sample according to claim 16, the control sample not having any protease activity.

18. A method of detecting a change in protease activity in a sample, comprising the steps of:

- i) adding to said sample a fluorescent protein according to claim 1 and the conditions necessary to allow fluorescence;
- ii) at a first timepoint, determining at least one of the emission and excitation spectra of said sample;
- iii) at a second timepoint, re-determining the emission and/or excitation spectra of said sample determined in step (i);
- iv) comparing the results of steps (ii) and (iii); and
- v) correlating the results of comparison step (iv) to determine any change in the level of said protease activity in said sample.

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19. A method of determining the effect of a compound on the activity of a protease in a sample, comprising the steps of:

- i) adding to said sample a fluorescent protein according to claim 1 and the conditions necessary to allow fluorescence;
- ii) determining at least one of the emission and excitation spectra of said sample;
- iii) treating said sample with said compound and re-determining the emission and/or excitation spectra of said sample determined in step (ii);
- iv) comparing the results of steps (ii) and (iii); and
- v) correlating the results of comparison step (iv) to determine the effect of said test agent upon said activity of said protease.

20. A method of determining the effect of a compound on the activity of a protease in first and second samples, comprising the steps of:

- i) adding to said samples a fluorescent protein according to claim 1 and the conditions necessary to allow fluorescence;
- ii) determining at least one of the emission and excitation spectra of said first sample;
- iii) treating said second sample with said compound and determining the emission and/or excitation spectra of said second sample determined in step (ii) for said first sample;
- iv) comparing the results of steps (ii) and (iii); and
- v) correlating the results of comparison step (iii) to determine the effect of said compound upon said activity of said protease.

21. The use of a cell according to claim 10 in a method of determining the activity of said protease.

22. The use of a protein according to claim 1 in a method of determining the activity of said protease.

23. The use of a protein according to claim 1 in a method of determining the effect of a compound on the activity of said protease.

24. The use of a protein according to claim 1 in a method of determining the effect of first and second compounds on the activity of said protease.

25. A fluorescent protein according to claim 1, said protease being a caspase.

26. A fluorescent protein according to claim 25, said caspase being selected from any one of the group of caspase-3, caspase-8 and caspase-9.

27. A method according to any one of claims 11-15, said protease comprising a caspase and said method comprising a method of detecting apoptosis of said sample cell.

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